



الجامعة الإسلامية العالمية ماليزيا  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA  
يُونَيْتِي اِسْلَامِي اِنْتَارَا يَحْسِبَا مِلْدِيَا

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**Research Proposal**

**COVID-19 Impact: Canada Vs Philippines**

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Lecturer's Name:

**DR. SHARYAR WANI**

Prepared by:

No	Name	Matric No
1	Liu Yufei	1722279
2	Queen Fatema Merhin	1726578
3	Zian Md Afique Amin	1631005
4	Muhammad Syazmi bin Suhaidi	1814573

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# COVID-19 Impact On Canada and Philippines

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## 1. Introduction

Corona virus has affected almost every corner of the world. The most destructive factor since the Second World War has been the global pandemic. There is virtually no single nation or society that, medically, socially, economically and politically has not felt its effect. The pandemic has driven the world economy into a slump, forcing the economy to continue to shrink and inflation to halt.

The COVID-19 pandemic had a profound effect on the economy of Canada, bringing them to a recession. The social distancing laws of governments have had the effect of restricting the country's economic activity. Companies began planning workforce mass-layoffs, which were effectively avoided by the Canada Emergency Wage Subsidy.

Similarly, since early March, when the first case of local transmission was reported, the Philippines has been battling its own coronavirus outbreak. Since then, the announcement of the Red Sub-level 2 Code (March 12), the Enhanced Community Quarantine (ECQ) covering all of Luzon (March 16 to April 30) and the introduction of mass monitoring measures (April 14) have been implemented, among others.

For performing the analysis of impact of coronavirus on Canada and Philippines and make a comparison between them, we have chosen few datasets from :  
<https://www.kaggle.com/vanshjatana/virus-in-canada/notebook#data> and  
<https://www.kaggle.com/cvronao/covid19-philippine-dataset>. We will choose some datasets from here which will include the travel history of people in Canada and Philippines, recovery, mortality and testing according to age, gender and states. These data are enough for us to analyze the covid-19 situation in Canada and Philippines and make a comparison between them.

## **2. Research Questions/Hypothesis**

- I. What is the death rate of total cases in Canada and Philippines respectively?
- II. Since Canada and Philippines have different geographical locations and economical development, Are there different recovery rates and death rates per age group between Canada and Philippines?
- III. Is local transmission or import cases the main COVID-19 source in Canada and Philippines?
- IV. Based on temperature condition, to what extent does it affect the COVID-19 transmission rates or growth factors in Canada and Philippines?
- V. Similarly, both of Canada and Philippine have the issue that male is more vulnerable than female. Why does the Philippines have greater gap than Canada?

## **3. Research Objectives:**

- I. To compare the death rate in Canada and Philippine.
- II. To research if COVID-19 affects the developing countries more or developed countries .
- III. To identify the main source of the new cases.
- IV. To evaluate if temperature has the effect on the COVID-19 transmission .
- V. To find out the reason that Philippine has greater difference based on gender than Canada.

#### **4. Research Significance:**

This research will help us understand the covid situation in Canada and Philippines and the countries' strategy to cope with such situations. By performing the analysis, it can also be determined whether Canada is performing well or poorly compared to the Philippines in dealing with covid-19 situation.

Additionally, other countries can take help from the analysis to cope with covid-19 situation. Which strategy is more effective will be understood by analyzing the recovery rate of both of these countries. Also, we can analyze the mortality rate with age groups to determine which age group is most likely to get highly affected by corona and which age group is least likely to be affected. Moreover, with the help of gender columns, it can also be determined whether male or female are most likely to be affected by coronavirus.

Furthermore, the travel history of people will help us analyze from which countries it is most likely to import coronavirus cases in Canada and Philippines. Hence these aspects will help us to get an overall idea of coronavirus in Canada and Philippines as well as make a comparison between them.

#### **5. Related Work**

Researchers Ashleigh, David and Amy(2020) discovered that physical-distancing interventions have slowed down the spread level of coronavirus, though different nanopharmaceutical inventions are being used. Dynamic physical distancing could maintain health-system capacity and also allow periodic psychological and economic respite for populations.

In another research regarding COVID-19 pandemic in Canada, it clearly stated that Canada faced different epidemiological situations during the covid-19 pandemic. Data was collected from official government documents whenever possible, supplemented by information from international databases and local media reports. The data was then analysed to identify common patterns as well as significant divergences across the country, especially in the areas of health policy and technology use. The varying degrees of federalism and regional autonomy across the country highlight the different constraints faced by national policy-makers within different governance models.

The presence of Covid-19 in high level income countries like Canada is raising important concerns about effective pandemic responses and also the preparation in terms of health. In Canada, some areas have bad settings for services that do not have access to normal and accurate information sources about infirmity. Symptoms and symptoms can not be detected by people living in the regions. Disease aetiology details. This may also be a factor in why Covid has 19 instances in the Canadians.

Philippine is the country which recorded the first death outside China. The first case of novel coronavirus (2019-nCoV, now COVID-19) in the Philippines was confirmed on 30 January 2020, in a 38-year old woman who arrived from Wuhan. Two days later, the Philippines recorded the first death outside China on 01 February 2020.

The 2019 coronavirus disease (COVID-19) pandemic presents a challenge to the mental health of populations. This research investigated the prevalence of depressive symptoms in the Philippines and described the variables contributing to the psychological effects. One fourth of respondents recorded moderate-to-severe anxiety during the early phase of the pandemic in the Philippines, and one sixth reported moderate-to-severe depression and psychological effects.

Kenneth fitted a hierarchical Bayesian model (to provincial COVID-19 death count time series) that estimated the effects of social distancing measures on COVID-19 transmissibility. There were, however, certain crucial but unknown input parameters, namely, the provincial COVID-19 infection fatality rates (IFR, defined as the conditional probability of dying of COVID-19 given that one is infected with it). Their theoretically straightforward estimates are simply the provincial ratios of the number of COVID-19 deaths to the true number of COVID-19 infections. Unfortunately, the near-complete lack of knowledge of the latter, especially during the early phase of the pandemic, rendered the IFRs highly uncertain.

Currently, in Canada there are more than 555K cases, among them 457k cases are recovered cases and 14964 are dead. The number of cases is increasing everyday. In Philippine, current cases are more than 472k, among them 439k are recovered and 9162 are dead.

## 6. Methodology

This proposal contains various aspects of Coronavirus and its impact to Canada by reviewing the literature and information. The data collection used for this research is secondary type taken from kaggle. Theoretical and empirical articles both were taken into consideration for this research purpose. The datasets were discussed among the group members before proceeding with the proposal. The study case emphasizes the graphical technique while classical technique emphasizes quantitative technique. First we will explore the dataset and clean the dataset(if needed), then we will do feature engineering and finally to analyze our research question we will use various libraries.

Public Covid-19 cases in Canada, total recovered patients, total testing and mortality of the corona affected Canada from a certain date will be analyzed for this study case in order to accomplish the objective of this study case. Sample plots and output will be generated with the Dataplot software program. Line graphs will present the depicted change or trend of variables of covid cases in Canada over a period of time. Certain libraries that will be used for this study case are matplotlib, numpy, panda, seaborn and others libraries that will be considered when the study case is conducted.

A K-mean algorithm will be applied for this study in order to solve these cases and for prediction. We decided to choose K-means because it is one of the straightforward unsupervised learning algorithms that mainly solves the clustering problem. The procedure of K-Means to classify a given data set through a certain number of clusters. The main idea is to define the K centers, one for each cluster and the centers should be placed in a cunning way because different locations cause different results. Placing them far away from each other would be a good option. The next step is to take each point belonging to a given data set and associate them to the nearest center. A loop will be generated to complete the algorithm. As a result of this loop the k centers change their location step by step until no more changes are done. Finally the algorithm aims at minimizing an objective function known as squared error. The advantages of using this algorithm are, the algorithm can complete at faster rate of time and easier to understand as it demonstrates in graph visualization.